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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/520,541	01/04/2005	Alain Virgl	15675P566	9359

7590 04/06/2007

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EXAMINER	
MITCHELL, KATHERINE W	
ART UNIT	**PAPER NUMBER**
3677	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/06/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/520,541	VIRGL ET AL.	
	Examiner	Art Unit	
	Katherine W. Mitchell	3677	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 March 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12 and 14-17* is/are rejected.

7)☒ Claim(s) *13* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _____ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☒ Interview Summary (PTO-413) Paper No(s)/Mail Date. *20070320*.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 6, 12, 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 6 recites "microadditions" - -what defines a microaddition?

Claim 12 does not recite any parameters for the ductility. Examiner would have expected ductility to be function of at least temperature.

Claim 14 provides for the use of the screw, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claim Objections

3. Claim 1 recites a "screw made merely by" ... and this wording is indefinite. Is "made merely" used as an equivalent to "consisting of" , "comprising", or is there another meaning -- exactly what is the limitation of "made merely by"? Claims 2-17 are objected to as depending from claim 1.

4. Claim 13 is objected to because of the following informalities : it recites N content of 0.012% max. The priority documents recite N content of 0.012, a difference by a factor of 100.

5. Claims 1-17 do not specify what type of percent. Examiner assumed weight percent, but does not see this in the claims, spec, or drawings. This must be supported in the parent or by translation error. Documentation of this support WILL be considered after final.

Appropriate correction is required.

Claim Rejections - 35 USC § 101

6. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

7. Claim 14 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd.* v. *Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

8. Also, examine notes that the claim is to an apparatus, not a method of using the apparatus.

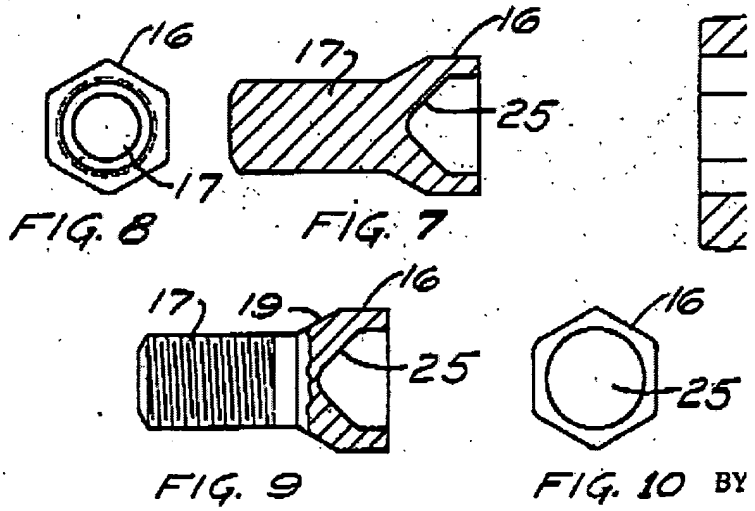
Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hunt USP 2213813 in view of Cassidy GB 2323387.

Re claims 1-3: Hunt teaches a socket head screw (Figs 1 and 7-10) made of metal, but is silent on the specific metal. The socket head, as shown in Figs 7 and 9 of Hunt, has a socket depth of 0.6, or 0.8 times a socket diameter. Examiner notes that applicant did not specify a particular diameter, and clearly the socket of Hunt has a diameter that approaches zero, where the angled bottom of the socket tapers to a point. Note that applicant did not specify a maximum diameter, but a diameter.



BY

Cassidy teaches a bolt that is made of a low carbon steel, specifically a steel having 0.2 to 0.35 % carbon. Such a low carbon steel is known to provide improved strength (page 4, lines 8-10), and examiner knows from personal experience that low carbon steels are also preferred for low temperature applications, for example. Examiner notes that in an apparatus claim, the method of forming the device is not germane to the issue of

patentability of the device itself. Further, this can be considered a product by process claim:

Therefore, it would have been obvious to one of ordinary skill in the art, having the teachings of Hunt and Cassidy before him at the time the invention was made, to modify Hunt as taught by Cassidy to include making the bolt of low carbon steel, with carbon between 0.15 to 0.25%, in order to obtain high load-bearing capabilities and better performance in specific applications such as low temperature or where ductility is important. One would have been motivated to make such a combination because a versatile, strong, ductile, and inexpensive fastener would have been obtained, as taught/suggested by Cassidy and common knowledge in the art.

11. Claims 1-4, 8, 10, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shigematsu USP 5370021, hereafter '021 in view of ASM International Committee on Threaded Steel Fasteners, "Specification and Selection", page 7 of 17, hereafter called ASM.

RE claims 1-2: '021 teaches in Figs 3 and 4 a hollow socket head fastener with a depth greater than 0.6 times a diameter of the socket, but is silent on the steel and carbon content of the metal. ASM teaches that "grade 1022 steel is a popular low-carbon steel for threaded fasteners" on page 7 of 17. Examiner takes Official Notice that Grade 1022 steel is defined as having 0.17-0.23% Carbon. Note that this a product claim, and the method of forming the device is not germane to the issue of patentability of the device itself. Therefore, it would have been obvious to one of ordinary skill in the

art, at the time the invention was made, to have modified '021 in view of ASM in order to use known and common grades of steel for fasteners when making a fastener.

FIG. 3

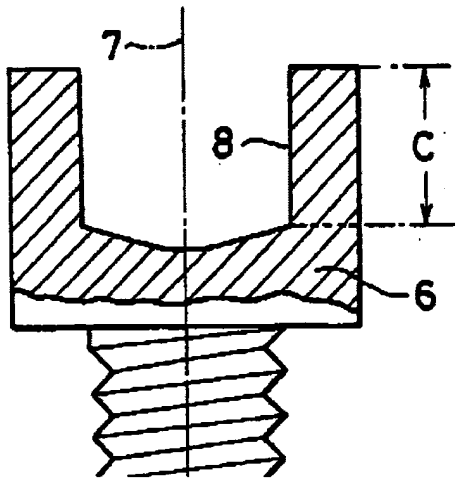
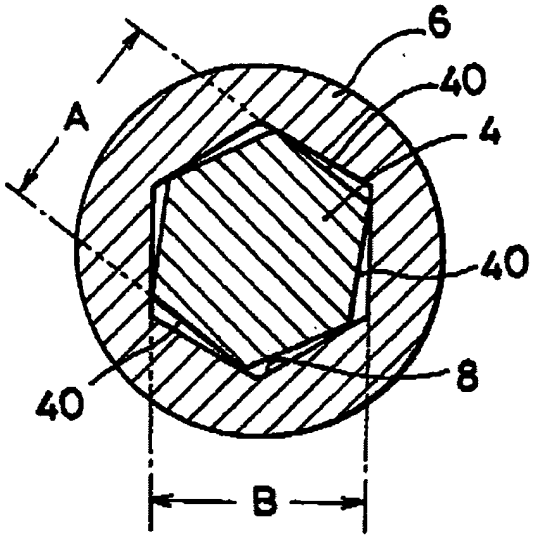


FIG. 4



Re claim 3: '021 specifies that the depth "C" (which examiner notes does not include the depth of the bottom angled recess) is at least 60%.

5 head bolt 6 in JIS-M12 (B is 10.04–10.13 mm and C is 6 mm or more) are: A 10.0 mm, "extension" of the flat

Re claim 3: A deeper socket of 0.8 or more of the socket diameter would be obvious to one of ordinary skill in the art, if the socket needed to span a deeper hole in a substrate or allow for deeper/longer engagement with the driving tool. Such proportions are within bolt head standards. Further, examiner notes that applicant did not specify a particular diameter, and clearly '021 has a socket diameter that approaches zero, where the angled bottom of the socket tapers to a point.

Re claim 4: Grade 1022 steel is defined as having a Mn content between 0.7 and 1.4 wt percents, which includes 1 to 1.3..

Re claim 8: Grade 1022 steel is defined as having a Si content between 0.1 and 0.4 wt percent, which includes 0.3-0.4.

Re claim 10: Grade 1022 steel is defined as having a S content between 0.0 and 0.05 wt percent, which includes 0.015 and under.

Re claim 15: Grade 1022 steel is defined as having a Mn content between 0.7 to 1.4%, which meets the limitation between 1.0 and 1.3 wt percent

12. Claims 1-5, 9, 10-12, 15, 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shigematsu USP 5370021, hereafter '021 in view of Klass et al, DE 3427557.

RE claims 1: '021 teaches in Figs 3 and 4 a hollow socket head fastener with a depth greater than 0.6 times a diameter of the socket (figs copied above), but is silent on the steel and carbon content of the metal. Klass teaches that a steel for threaded fasteners ("vergleichsstahl"or "comparison steel" in the table below)

Erfindungs-gemäßer Stahl	Chemische Analyse C %	Mn %	Cr %	B %	Festigkeit nach dem Walzen R_m MPa	$R_p0,2$ MPa	Z %	A_5 %
1	0,35	1,14	0,23	0,006	700	420	58	28
2	0,37	0,53	0,27	0,005	780	500	67	23
Vergleichsstahl	0,17	1,27	0,14	0,005	520	340	68	30

Erfindungs-gemäßer Stahl	Festigkeit nach dem Stauchen R_m MPa	$R_p0,2$ MPa	Z %	A_5 %	Festigkeit nach dem Vergüten R_m MPa	$R_p0,2$ MPa	A_5 %
1	810	690	52	14,5	-	-	-
2	860	740	66	14,1	-	-	-
Vergleichsstahl	-	-	-	-	mind. 800	mind. 640	mind. 12

Note that this a product claim, and the method of forming the device is not germane to the issue of patentability of the device itself. Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to have modified '021 in view of Klass in order to use known and common grades of steel for fasteners when making a fastener.

Re claim 3: '021 specifies that the depth "C" (which examiner notes does not include the depth of the bottom angled recess) is at least 60%.

5 head bolt 6 in JIS-M12 (B is 10.04 – 10.13 mm and C is 6 mm or more) are: A 10.0 mm, "extension" of the flat

Re claim 3: A deeper socket of 0.8 or more of the socket diameter would be obvious to one of ordinary skill in the art, if the socket needed to span a deeper hole in a substrate or allow for deeper/longer engagement with the driving tool. Such proportions are within bolt head standards. Further, examiner notes that applicant did not specify a particular diameter, and clearly '021 has a diameter that approaches zero, where the angled bottom of the socket tapers to a point.

Re claims 4 and 15 (Mn 1-1.5%), claims 5 and 16 (B 10-50 ppm), claim 9 (Cr .14-.18%), and claim 10 (S .015% max): These are taught in the table as copied above.

Re claim 11: Minimum tensile and yield strengths as claimed are taught in the table above.

Re claim 12: Ductility z% > 65% is taught in the table above.

13. Claims 1-11, 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shigematsu USP 5370021, hereafter '021 in view of Cassidy, GB 2323387

RE claims 1-2: '021 teaches in Figs 3 and 4 a hollow socket head fastener with a

FIG. 3

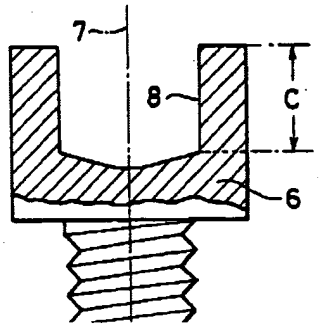
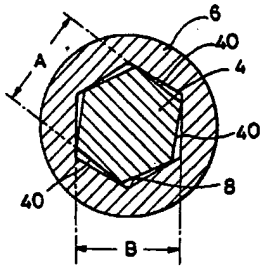


FIG. 4



depth greater than 0.6 times a diameter of the socket, but is silent on the steel and carbon content of the metal. Cassidy teaches that a low carbon steel for threaded fasteners" on pages 3-4, per below:.

Carbon (C)	0.20 to 0.35%		
Silicon (Si)	0.15 to 0.35%		
Manganese (Mn)	1.10 to 1.40%		
Phosphorous (P) + Sulphur (S)	0.02% maximum		
Boron (B)	0.002 to 0.004%	Molybdenum (Mo)	Nil
Chromium (Cr)	0.10 to 0.60%	Aluminium (Al) + Titanium (Ti)	0.02 to 0.05%
Nickel (Ni)	Nil	Iron (Fe)	Balance to 100%

Note that this a product claim, and the method of forming the device is not germane to the issue of patentability of the device itself. Therefore, it would have been obvious to

one of ordinary skill in the art, at the time the invention was made, to have modified '021 in view of Cassidy in order to use steel with .20 percent carbon designed for high strength for fasteners when making a fastener.

Re claim 3: '021 specifies that the depth "C" (which examiner notes does not include the depth of the bottom angled recess) is at least 60%.

5 head bolt 6 in JIS·M12 (B is 10.04–10.13 mm and C is 6 mm or more) are: A 10.0 mm, "extension" of the flat

A deeper socket of 0.8 or more of the socket diameter would be obvious to one of ordinary skill in the art, if the socket needed to span a deeper hole in a substrate or allow for deeper/longer engagement with the driving tool. Such proportions are within bolt head standards. Further, examiner notes that applicant did not specify a particular diameter, and clearly '021 has a socket diameter that approaches zero, where the angled bottom of the socket tapers to a point.

Re claims 4 and 15 (Mn 1-1.5%), claim 5 and 16 (B 10-50 ppm) claims 6-7 and 17 (Ti .01 to 1.0%), claim 8 (Si .3-.4%), claim 9 (Cr .14-.18%), and claim 10 (S .015% max) : These are taught in pages 3-4 as copied above.

Further regarding claims 6-7 and 17 (Ti .01 to 1.0%): Examiner takes Official Notice that it is well-known that Ti in amounts of 0.01-0.1 wt % are useful in steels as a grain refiner (see in particular USP 4240821) and that either Ti or Al serve as fixers to improve precipitation (see for example US 4702778). Note that US 4925500 teaches

> *"since titanium reacts with carbon, oxygen, nitrogen, sulfur, etc. present in the steel, the titanium content should be determined by taking into consideration the amounts of these elements. In order to attain high press*

workability through fixation of these elements, it is necessary that titanium be added in an amount of 0.01% or more. However, the addition in an amount exceeding 0.2% is disadvantageous from the viewpoint of cost.

Re claim 11: Minimum tensile and yield strengths as claimed are taught in Fig 2 below, noting Mpa = N/mm Strength of graph.

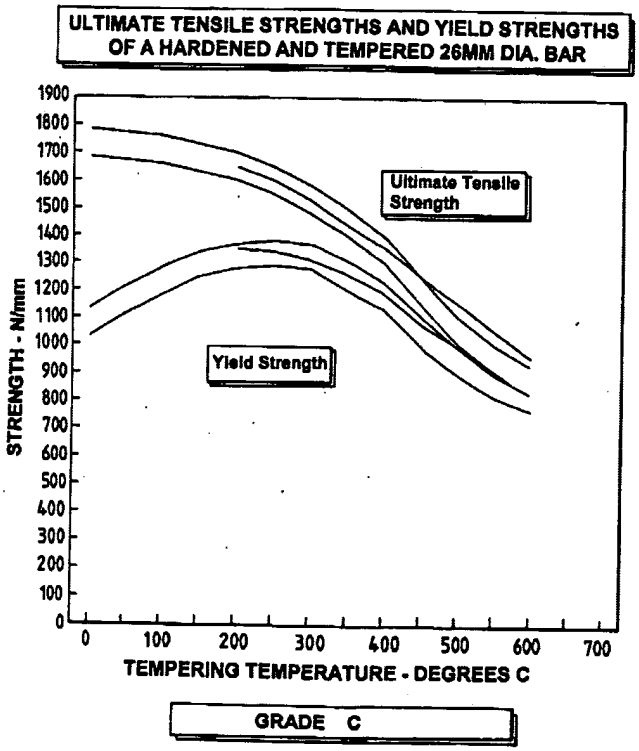


Fig. 2

Response to Arguments

14. Applicant's arguments filed 3/6/2007 have been fully considered but they are not persuasive.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies

(i.e., a specific socket diameter) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found **either in the references themselves or in the knowledge generally available to one of ordinary skill in the art**. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, examiner believes that the Cassidy reference explicitly teaches an advantage - improved load bearing capabilities:

> Such a rockbolt will give a better range of load bearing qualities that are from 30% to 300% better than the current A.T. rockbolt, but which at the same time retains all the dimensional, weight and manual handling advantages.

Certainly the property of increased bolt strength is a universally appreciated benefit for bolts and screws. Further, examiner's opinion is considered one of ordinary skill in the art, and she believes one of ordinary skill in the art would consult ASME or SAE standards and choose materials based on their properties, and knowledge of properties such as use in low temperature situations.

Allowable Subject Matter

15. Claim 13 would be allowable if rewritten to overcome the objections set forth in this Office action and to include all of the limitations of the base claim and any intervening claims. That specific combination of materials in the recited ranges, along with the response to the Rule 105 request that the material composition was applicant's own and not a composition commercially available, reads over the prior art of record.

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

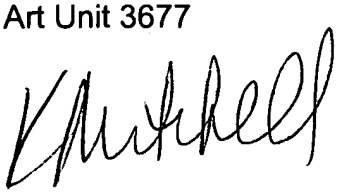
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine W. Mitchell whose telephone number is 571-272-7069. The examiner can normally be reached on Mon - Thurs 10 AM - 8 PM.

18. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, J. J. Swann can be reached on 571-272-7075. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Katherine W Mitchell
Primary Examiner
Art Unit 3677



Kwm
3/21/2007